

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (currently amended) An over-the-wire interlock attachment/detachment mechanism for a medical implant comprising:
 - a male locking body member having a forward end,
 - a flexible locking support having a locking member formed thereon which extends from the forward end of said male locking body member, said flexible locking support, when unrestrained, extending laterally and angularly outward from said male locking body member, and
 - a female lock receiving body member for receiving said locking member, said female lock receiving body member having a first body end and being formed with an indented portion adjacent to said first body end to receive and engage said locking member;

wherein one of said male locking body member and said female lock receiving body member comprises an alignment extension while the other comprises an extension receiving cutout, the alignment extension and the cutout being adapted for axially aligning the male locking body member and the female lock receiving body member for engagement.
2. (original) The over-the-wire interlock attachment/detachment mechanism of claim 1, wherein said female lock receiving body member is secured to said medical implant.
3. (currently amended) The over-the-wire interlock attachment/detachment mechanism of claim 1 wherein a lock operating sheath is mounted to slide on said male locking body member, said lock operating sheath operating to reversibly engage said

~~flexible locking support to move said locking support inwardly toward said male locking body member~~ with said female lock receiving body member.

4. (original) The over-the-wire interlock attachment/detachment mechanism of claim 1 wherein said male locking body member and female lock receiving body member are cylindrical members of substantially equal diameter.

5. (original) The over-the-wire interlock attachment/detachment mechanism of claim 4 wherein a lock operating sheath is mounted to slide on said male locking body member, said lock operating sheath operating to engage said flexible locking support to move said locking support inwardly toward said male locking body member.

6. (original) The over-the-wire interlock attachment/detachment mechanism of claim 5, wherein said female lock receiving body member is secured to said medical implant.

7. (original) The over-the-wire interlock attachment/detachment mechanism of claim 1 wherein a plurality of spaced flexible locking supports extend from the forward end of said male locking body member, each of said spaced flexible locking supports being formed by an elongate, flexible locking arm having a first arm end connected to said male locking body member, said elongate flexible locking arm extending angularly outward from said first arm end when said elongate flexible locking arm is unrestrained.

8. (original) The over-the-wire interlock attachment/detachment mechanism of claim 7 wherein a locking member is formed on each elongate, flexible locking arm and is spaced from the first arm end thereof and outwardly from the forward end of said male locking body member,

said female lock receiving body member being formed with indented portions adjacent to said first body end to receive and engage said locking members.

9. (original) The over-the-wire interlock attachment/detachment mechanism of claim 8 wherein each elongate, flexible locking arm has a free end spaced from the first arm end thereof, said locking member being formed by a shaped, enlarged section at the free end of said elongate flexible locking arm.

10. (original) The over-the-wire interlock attachment/detachment mechanism of claim 9 wherein said male locking body member and female lock receiving body member are cylindrical members of substantially equal diameter.

11. (original) The over-the-wire interlock attachment/detachment mechanism of claim 10 wherein a lock operating sheath is mounted to slide on said male locking body member, said lock operating sheath operating to engage said elongate flexible locking arms to move said elongate flexible locking arms and locking members inwardly toward said male locking body member.

12. (original) The over-the-wire interlock attachment/detachment mechanism of claim 11 wherein said female lock receiving body is cut away to provide spaced openings forming said indented portions, each said spaced opening being formed to receive a flexible locking arm and the locking member formed thereon.

13. (original) The over-the-wire interlock attachment/detachment mechanism of claim 12 wherein each such spaced opening includes an elongate, open ended entry section shaped to receive an elongate flexible locking arm and an enlarged locking cutout connected to said elongate open ended entry section, said enlarged locking cutout being shaped to receive and conform in shape to said locking member.

14. (currently amended) The over-the-wire interlock attachment/detachment mechanism of claim 1 wherein said flexible locking support includes at least one elongate flexible locking arm having a first end connected to said male locking body member, said elongate flexible locking arm extending angularly outward from said first arm end when

said elongate flexible locking arm is unrestrained, said locking member being formed on said elongate flexible locking arm, and

wherein said alignment extension comprises at least one elongate guide finger extending from the forward end of said male locking body member,

said female lock receiving body being cut away to provide a plurality of spaced openings each formed to receive an elongate flexible locking arm and locking member or a guide finger.

15. (original) The over-the-wire interlock attachment/detachment mechanism of claim 14, wherein said female lock receiving body member is secured to said medical implant.

16. (original) The over-the-wire interlock attachment/detachment mechanism of claim 14 wherein a lock operating sheath is mounted to slide on said male locking body member, said lock operating sheath operating to engage said at least one elongate flexible locking arm to move said elongate flexible locking arm and locking member inwardly toward said male locking body member.

17. (original) The over-the-wire interlock attachment/detachment mechanism of claim 16 wherein each such spaced opening includes an elongate, open ended entry section shaped to receive an elongate flexible locking arm or guide finger and an enlarged locking cutout connected to said elongate open ended entry section, said enlarged locking cutout being shaped to receive and conform in shape to said locking member.

18. (original) The over-the-wire interlock attachment/detachment mechanism of claim 17 which includes a plurality of spaced elongate flexible locking arms and a plurality of spaced elongate guide fingers, said female lock receiving body including a plurality of spaced openings at least equal in number to the number of elongate flexible locking arms and elongate guide fingers.

19. (original) The over-the-wire interlock attachment/detachment mechanism of claim 18 wherein said male locking body member and female lock receiving body member are cylindrical members of substantially equal diameter.
20. (original) The over-the-wire interlock attachment/detachment mechanism of claim 2 wherein said medical implant is a free standing over-the-wire filter.
21. (new) The over-the-wire interlock attachment/detachment mechanism of claim 1 wherein said alignment extension extends laterally from the forward end of said male locking body member.
22. (new) A medical implant delivery system comprising:
a locking mechanism sized and shaped for insertion in a mammalian blood vessel, the locking mechanism comprising a locking member; and
a sheath slideably disposed over the locking mechanism and allowing the locking member to repeatedly transition reversibly between a first state and a second state, wherein the sheath immobilizes the locking member in the first state when slid over the locking member and releases the locking member into the second state when slid away from the locking member.
23. (new) The delivery system of claim 22 wherein the locking member extends, in the first state, substantially parallel to a longitudinal axis of the locking mechanism.
24. (new) The delivery system of claim 22 wherein the locking member extends, in the second state, angularly outward from a longitudinal axis of the locking mechanism.
25. (new) The delivery system of claim 22 wherein the locking member comprises an enlargement at its free end.

26. (new) The delivery system of claim 25 wherein the enlargement is substantially circular.

27. (new) The delivery system of claim 22 wherein the locking mechanism comprises multiple locking members spaced substantially equidistant to a longitudinal axis of the locking mechanism.

28. (new) The delivery system of claim 22 further comprising an implant attached to the locking mechanism through a cutout section in the implant that receives the locking member.

29. (new) The delivery system of claim 28 wherein the implant is selected from the group consisting of an occluder, a filter, and a stent.

30. (new) The delivery system of claim 28 wherein the implant and the locking mechanism are axially aligned when the locking member is received in the cutout section.

31. (new) The delivery system of claim 22 further comprising a guidewire.

32. (new) The delivery system of claim 22 further comprising a flexible section.

33. (new) A method for retrieving a medical implant comprising:

accessing a medical implant using a locking mechanism comprising a locking member, wherein the locking mechanism is enclosed in a sheath, and the implant comprises a cutout section;

sliding the sheath away from the locking mechanism to allow the locking member to angle outwardly from a longitudinal axis of the locking mechanism;

positioning the locking member over the cutout section of the implant;

sliding the sheath back over the locking mechanism to lock the locking member in the cutout section and thereby locking the implant; and

retrieving the locking mechanism with the implant.

34. (new) The method of claim 33 where the accessing step comprises accessing the implant with a guidewire and passing the locking mechanism over the guidewire.

35. (new) The method of claim 33 wherein the implant is selected from the group consisting of an occluder, a filter, and a stent.